

HOW TO... Use Raw image files

Working with the Raw format allows you to make very specific adjustments while retaining image quality. Gordon Laing explains how to make a great shot even better

Most digital cameras are set to produce JPEG images as standard. However, decent models offer an alternative, which delivers better quality and much greater flexibility. This is called the Raw mode, and it's featured on every digital SLR and some higher-end compacts. Shooting in Raw mode can give you a boost in quality, absolutely free of charge. Here, we'll tell you everything you need to know to make the most of this file format.

Raw mode records the data direct from your camera's sensor before it's been processed into a JPEG. That means it hasn't yet been sharpened, adjusted for white balance or even compressed – it is literally raw. Consequently, Raw files are larger than most JPEG images, occupying more space on your memory card. They'll also need processing on your computer afterwards, before you can use them. This can put many people off the Raw format. Still, big memory cards are cheap these days and, let's face it, you were probably going to perform adjustments on your computer later – so why not do it with a file that will really do your photography justice?

RAW DEAL

Every time you make an adjustment to a digital image, such as brightness or sharpness, you potentially reduce the quality. JPEGs have had many adjustments already applied by your camera, and performing more later affects

quality. Furthermore, some of your adjustments may attempt to reverse a setting already applied to the JPEG, such as sharpening softness or adjusting colour. You could be reducing your quality to get back to where the image started.

Raw files are untouched – a digital negative, if you like, waiting to be processed to your exact requirements. You can choose the precise colour, brightness, sharpening and many other aspects before applying them in a single, optimised step. Best of all, you can save the result with as little or as much compression as you like, or even as an uncompressed file. Most Raw files contain more data to play with than a JPEG, allowing you to unlock the ultimate quality from your camera.

SHOOTING RANGE

Raw modes are offered on every digital SLR and a handful of better point-and-shoot models. You'll find the option in your image quality menu, but check your camera's manual for details. The first thing you'll notice in Raw mode is a reduction in the number of images you can fit on your memory card. Different cameras have different sizes for their Raw files, and some can apply lossless compression, but generally you are looking at 10MB to 20MB per Raw image, compared to 3MB to 5MB for a JPEG.

These bigger files will also affect the time taken to record them to the card and the speed at which your camera's continuous shooting

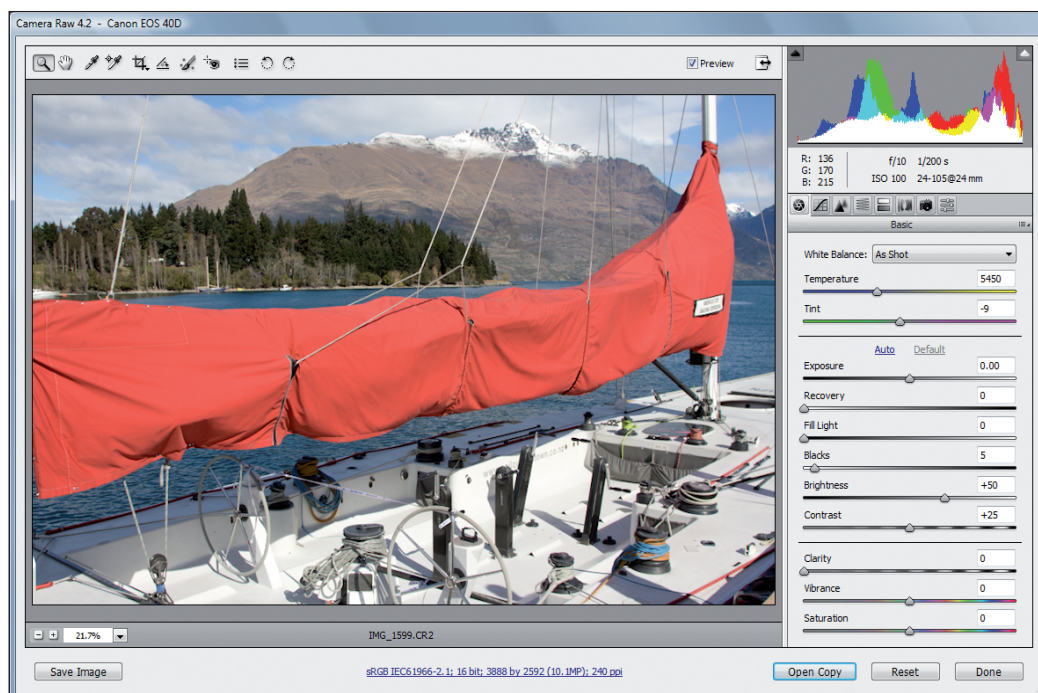
buffer fills up. If your camera could shoot 30 JPEGs in quick succession, it may fire off fewer than 10 Raw files at a time. These factors can make Raw less suitable for demanding action photography.

An interesting option offered by many cameras is Raw plus JPEG. This records both a Raw file and a JPEG version of every image, giving you the long-term flexibility of a Raw file with a processed JPEG that's ready to use. This will eat through your memory even quicker, but is useful for certain situations. Some professional DSLRs with twin memory card slots record the Raw file on one slot and the JPEG on the other, providing a degree of automatic backup.

If you are shooting in Raw plus JPEG mode, make sure you know what kind of JPEG you're recording. Some cameras let you accompany your Raw file with a JPEG setting of your choice, but others force you to use a lower-quality JPEG. However, you will still have the Raw file from which to create higher-quality photos.

SETTING THE STANDARD

Unlike JPEG, Raw is not a standard format across all cameras. Each manufacturer employs a proprietary Raw format, and most change the format slightly for every model. This is tricky for the companies that produce Raw processing software, as they need to update their software continually to support newer models.



◀ The interface for Adobe's Camera Raw utility allows you to make significant adjustments to the image, reduce noise levels and correct lens imperfections

One company attempting to standardise Raw is Adobe with its Digital Negative (DNG) format. Adobe offers a free converter that can turn a proprietary Raw format into the DNG format for greater compatibility with existing software, along with better potential for archiving. The converter program also has to be updated regularly to support the latest cameras, but Adobe doesn't normally keep you waiting more than a few weeks following a new launch.

A handful of cameras can record direct to the DNG format; these include models from Hasselblad, Leica, Ricoh and Samsung, along with the popular Pentax K10D digital SLR. See www.adobe.com/products/dng for more details.

GET WITH THE PROGRAM

Most cameras that support Raw recording come with software to process the Raw files. Canon supplies its DSLRs with one of the best free programs of any manufacturer: Digital Photo Professional. Other supplied programs can be basic, though, and perform a simple conversion with few opportunities to tweak the image.

Consequently, a wide variety of third-party Raw processing programs have become available with different features and prices. While some programs are more powerful than others, the final results are very much a personal thing. We'd advise trying out several programs until you find one that works well for you. Most offer a free trial, and some are available in a choice of 'pro' or 'lite' versions.

Raw processing programs that have gained popular followings, and that are well worth trying, include Bibble (www.bibblelabs.com), BreezeBrowser (www.breezesys.com), Capture One (www.phaseone.com), DxO Optics Pro (www.dxo.com) and Adobe's Camera Raw plug-in, which works alongside its own imaging programs, such as Photoshop (www.adobe.co.uk). Nikon owners can also try CaptureNX, which is dedicated to Nikon cameras (www.nikon.co.uk).

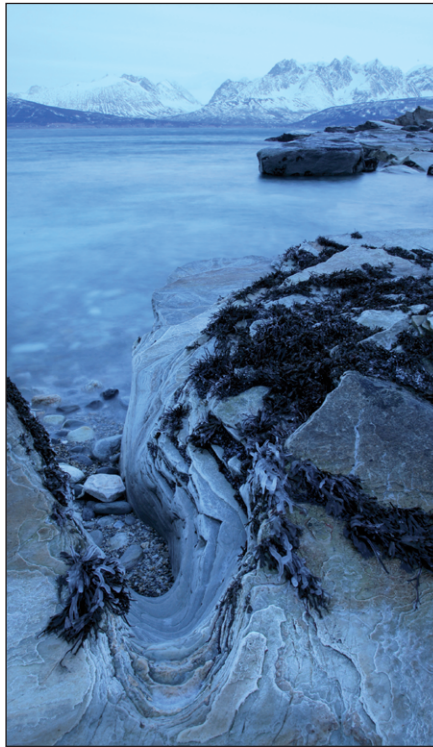
Adobe Camera Raw is one of the most popular options and receives regular updates for new cameras although, infuriatingly, the updates may also require the latest versions of Adobe's imaging applications. For example, the latest Camera Raw update may support cameras such as Canon's EOS 40D and Olympus's E-510, but it also requires Photoshop CS3 or Lightroom 1.2 to operate. If you have an older version of Photoshop, such as CS2, you're limited to earlier versions of Camera Raw without support for the latest models. One solution is to use Adobe's free converter to turn new Raw files into the DNG format, which can then be opened in older programs.

Our examples use Adobe Camera Raw under Photoshop CS3, although the features are similar across most Raw programs.

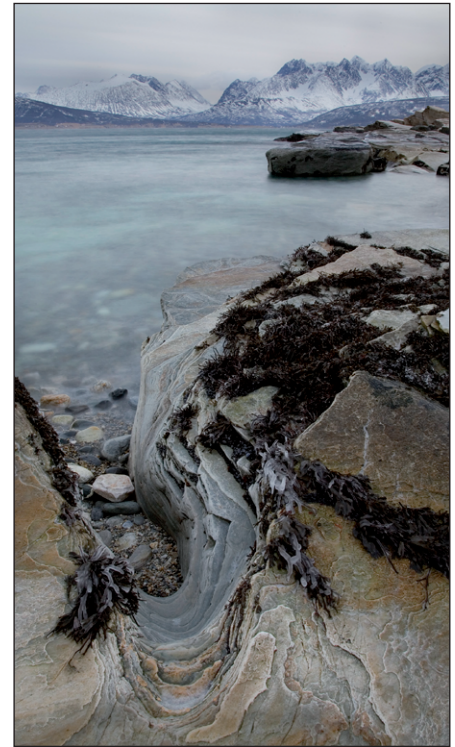
REAPING THE BENEFITS

Once you've got some Raw processing software on your computer, you can begin. When we open a compatible Raw file in Photoshop, the Camera Raw window will appear, showing the image on the left, with a number of tools running along the top and a series of tabs and sliders on the right.

Like most photo-retouching programs, you can adjust brightness, contrast and exposure. The



▲ Shooting in Raw mode enables you to make significant adjustments without ruining the picture. The original image (left) was taken at twilight and has an almost monochrome effect. By adjusting the Raw file, we've made it look far more natural (right)



difference between working with a JPEG and a Raw file is that the Raw file typically contains more tonal range, giving you greater latitude for adjustments. Standard JPEGs contain eight bits of tonal detail, whereas a Raw file could contain 10 to 14 bits. This can be great for retrieving detail that you might have thought you had lost in dark shadows or bright highlights, or simply making a brightness adjustment without compromising overall quality.

One big advantage of working with Raw files is being able to apply your choice of White Balance settings after the photo is taken. Indoor lighting in particular can give an orange cast to photos for which cameras often fail to compensate at the time of shooting. This can be hard to correct on a JPEG. With a Raw file, it is as simple as clicking on the desired setting in the Raw software. It's fun to try different White Balance settings, as these can give unexpected and sometimes preferable results.

Many digital images can benefit from sharpening, but the techniques that are applied in-camera on JPEGs can often be lacking in sophistication. Now you're on your computer, though, you can apply advanced sharpening techniques to a Raw file that is as yet untouched. This is very important. Sharpening should be applied to an image only once, and the Raw format gives you the chance to do it right.

Noise reduction is another setting that can be difficult to apply in-camera. Again, you'll have access to much finer and more sophisticated controls when using Raw software. Simply apply as little or as much noise reduction as you like.

Some Raw programs allow you to correct common lens problems such as chromatic aberrations, responsible for coloured fringing, and vignetting, where the image gets darker in the corners. They can also often read additional lens information from the file, such as the lens

type and focal length of the shot, which could be used for further adjustments. Other Raw programs can use proprietary information recorded by the camera to identify and automatically remove dust marks, although this feature is normally supported only by software that comes with the camera or is designed specifically for it.

You can apply all the adjustments in a single step, and either export the result into a program such as Photoshop for further tweaking or save it directly to your hard disk. At this point, you can choose the file format and degree of compression. A particularly appealing option to choose is TIFF with 16 bits of tonal detail, as this will give greater flexibility for further adjustments later. If you think you'll be applying the same adjustments to multiple files, you can save your settings and apply them in a single step or in a batch.

WHEN TO GO RAW

Shooting in Raw mode certainly enables you to get more from your photography. However, unless you're a demanding photographer, we wouldn't advise using this mode for every single image that you want to take, given that Raw files consume more memory than JPEGs and continuous shooting is affected. If you're simply taking snaps then standard JPEGs should be fine, although we would still advise using the least-compressed setting.

However, if you are presented with a once-in-a-lifetime opportunity to capture a fantastic view, or you anticipate performing adjustments later, Raw mode is ideal. It is also very useful when your camera keeps getting the White Balance wrong. Think of Raw mode like your best cutlery – it may not be something you are going to use every day, but it is there ready and waiting for those extra-special occasions. **CS**